

**Mediterranean Coast Network
Vital Signs Monitoring Program
Budget and Workplan for FY2001 and FY2002**

The Mediterranean Coast Network is composed of three parks: Cabrillo National Monument (CABR), Channel Islands National Park (CHIS), and Santa Monica Mountains National Recreation Area (SAMO). These parks are relatively small, isolated, parts of a large fragmented, urbanized, Mediterranean ecosystem with multiple overlapping jurisdictions. All three parks have developed strong ties and working relationships with many outside experts and cooperators, and have made substantial progress in developing and implementing individual monitoring programs. The major challenges for this park network are finding ways to share scientific expertise among the parks, and improving integration among parks and a wide variety of partners. We believe the best way to initially address these challenges is to focus efforts on compiling, analyzing, and synthesizing existing data and programs. Although in many cases, expertise, monitoring protocols, and database structures have been shared among the parks, no major effort has yet been made to integrate the parks' monitoring into an overall approach for the southern California coast region. This document briefly describes a network strategy that builds on existing programs, identifies gaps, and proposes how to fill the gaps with NPS expertise and partnerships. The goal is an integrated network-wide vital signs monitoring program within the Mediterranean Coast Network.

To move beyond individual park programs to an integrated network monitoring program, in the first two years (FY2001, FY2002) we will:

1. Compile and summarize existing information on monitoring programs and stewardship issues;
2. Seek to identify additional park-specific management issues, stressors, and vital signs to monitor;
3. Hold workshop(s) to identify network issues and to determine overlap of park issues, identify indicators and potential monitoring strategies, and generally evaluate programs in terms of overall network monitoring needs and priorities; and
4. Develop a network vital signs monitoring plan to fill gaps and meet network goals.

Future efforts will focus on selecting, adapting, and developing monitoring protocols, and on analyzing, synthesizing, and reporting results of monitoring activities.

Preparation and Planning. The network has already compiled, organized and documented a substantial amount of biological inventory and natural resource information. All three network parks convened a two-day workshop in June, 2000, and discussed how to assess resource status and trends with more than 80 biological experts from the region. Participants examined and expanded upon bibliographies, GIS data lists, and species presence, absence and abundance. Existing programs, including those conducted by potential partners as well as NPS, were identified as potential parts of a network monitoring program. Since the workshop, inventory technicians have continued to search out and acquire data, and to convert and document existing databases to meet NPS standards.

Additionally, each park has conducted considerable assessment and scoping of monitoring programs prior to the biological inventory. Due to network proximity to large urban population centers and numerous renowned research and academic institutions, all three parks have developed strong ties and working relationships with many outside experts and cooperators. As a result, park resource managers and

scientists have an excellent awareness of research and monitoring programs which already exist in the region and, in some cases, have adopted and expanded upon these pre-existing monitoring efforts.

All three network parks have also individually identified management issues, stressors, and likely vital signs. For CHIS and CABR, these questions were addressed in a series of directed workshops with local experts and partner agencies, as well as other park planning efforts. At SAMO, "...a vital signs monitoring program (with associated projects) is being established as an integral objective of the park's resource stewardship program..." as part of the "...broader goal of obtaining knowledge and understanding of natural and cultural resources..." (SAMO RMP, 1999). Although SAMO has not conducted a workshop or scoping session focused solely on monitoring, management issues and ecosystem stressors have been identified and priorities assessed—and reassessed—annually as part of the park's RMP (1994, 1999), park workplan development, GMP (2001), and routine networking with local experts. However, it is recognized that a monitoring workshop will result in a more comprehensive investigation of park vital signs. Thus, a SAMO-specific workshop is being planned for fall 2001 to identify additional indicators and thoroughly evaluate monitoring priorities.

The next step for the network as a whole is a thorough assessment of existing monitoring programs. A quantitative ecologist will be hired as the network coordinator in July, 2001, to facilitate that assessment. Components of existing monitoring programs, or those proposed in monitoring plans or other planning documents, are listed in Table 1. The table also identifies the many linkages between two or more network parks. An analysis of existing and proposed protocols and data management procedures will allow the network to systematically identify opportunities to more efficiently manage and conduct an integrated vital signs monitoring program. Additionally, gaps and redundancies will be identified. Subsequently, a network-wide scoping workshop will be held in June 2002 to identify network issues and potential vital signs, and to evaluate overall network monitoring needs. Results of this workshop will be summarized and a network vital signs monitoring plan will be developed by the end of calendar year 2002.

Implementation and Budget. The network will hire a permanent full-time monitoring coordinator at a GS-11 or GS-12 to start in July 2001. The network is currently evaluating appropriate position descriptions and completing paperwork necessary to hire this position. This position will be filled by a quantitative ecologist who initially will be responsible for assessing and integrating existing programs and data and developing a cohesive network Monitoring Plan. Upon approval and implementation of the plan, the coordinator will ensure that data are properly stored and documented, analyze and synthesize collected data, report results, and market the network vital signs program both within and outside the NPS.

Information management is a critical and unifying function of the network. Rather than hiring both a data manager and a network coordinator for such a small network, a quantitative ecologist can serve both functions well. The network coordinator will oversee information management and facilitate analysis, synthesis, and reporting results, but not supervise day-to-day monitoring operations. Vital signs monitoring has been fully integrated in both CABR and CHIS park operations for many years and could not be extracted without severe negative consequences on both monitoring and other stewardship functions. However, this also means that operationally, day-to-day supervision and coordination of monitoring activities among the three parks will be relatively easy, leaving the network coordinator substantial time for data synthesis, analysis, and reporting. Thus, the network is confident that a quantitative ecologist can both oversee information management and coordinate operations.

The network also has some significant existing assets available for information management. Over the past decade, CHIS has developed data structures and analytical tools that can be adapted for network use.

The other two network parks have already taken advantage of CHIS' databases and expertise. That link will only become more important as the network monitoring program expands. Additionally, many consultants and outside experts are available locally to contract for complex projects (including analytical and data management support from the USGS-BRD). High-level data management will be contracted as needed, a strategy which has worked extremely well for CHIS, while data entry and simple database development tasks will be the responsibility of a database/GIS technician to be hired in October 2001.

Full implementation of an integrated network monitoring program will be driven by the network monitoring plan to be completed in December, 2002. This will coincide with the availability of the I&M Program complete base funding of \$300,000 per year beginning in FY2003. The network monitoring plan will include a budget to account for this "full" funding level. However, startup funds in the amount of \$150,000 per year will be made available in both FY2001 and FY2002. See Tables 2 and 3 for a detailed budget for the startup funding.

Using the vital signs startup funds, the network will support one full-time monitoring coordinator for a portion of FY2001 and all of FY2002. A part-time database/GIS technician will be funded for FY2002. As 2001 funds were not available until well into the fiscal year, the network coordinator position cannot be realistically filled until July 2001 and the technician (who is currently working on network biological inventory projects) will not be available until October 2001. Thus, the network must obligate a substantial amount of FY2001 startup funding in other ways. An Inventory and Monitoring (I&M) Prototype park, CHIS has received a total of \$622,000 added to annual base funds from the prototype I&M Program. As SAMO and CABR have received no I&M monitoring funding in past years, the remaining startup funds will be divided between the two parks to provide infrastructure and equipment (e.g. computers, office furniture, field equipment) critical to expanded monitoring, complete park-specific planning necessary to develop a network vital signs monitoring program, develop monitoring protocols and supplement existing monitoring projects (see Table 4 for brief project descriptions).

These existing projects reflect top monitoring priorities both within the parks and in the local scientific community. The projects were initiated with a combination of NPS project funding and outside "soft" money sources, with the understanding that I&M funding will, in the future, provide a stable funding base appropriate for long-term monitoring needs. The startup funds in FY2001 and all future I&M funds will not be used to replace park base funding in any instance, but instead will supplement park base and supplement or replace project specific funding sources to continue or expand monitoring projects. Further, while network parks have many ongoing projects, vital signs monitoring startup funds are only proposed for projects consistent with the vital signs monitoring program. These projects all have peer-reviewed procedures and all will result in reports and data consistent with and contributing to a vital signs program in each park. All ongoing programs will be evaluated in a network context by the Network Coordinator and monitoring steering committee as well as during the Network Scoping Workshop and existing data will be incorporated into an integrated database. The data currently collected will certainly contribute to future monitoring, but specific tasks may be refined to reflect network priorities.

Timeline.

When	What	Who
July 2001	Hire Network Monitoring Coordinator	Network Steering Committee
July 2001-June 2002	Continue to compile existing data and information on existing monitoring	Network Coordinator, Network Monitoring Technicians
July 2001 – June 2002	Assess existing monitoring programs	Network Coordinator
September/October 2001	Hold SAMO-specific scoping workshop to identify additional vital signs	Network Coordinator, park staff and cooperators, and local subject matter experts
September 2001-December 2001	Complete scoping workshop reports for SAMO and CABR	Network Coordinator, park staff
February 2002-June 2002	Assemble information and prepare for Network Scoping Workshop	Network Coordinator and Monitoring Technicians
June 2002	Hold Network Scoping Workshop to identify and fill gaps for an integrated network-wide vital signs program	Network Coordinator and Monitoring Technicians, Network Steering Committee, park staff and cooperators, outside subject matter experts
June 2002-September 2002	Draft Network Vital Signs Monitoring Plan	Network Coordinator
October 2002	Review draft Monitoring Plan	Workshop participants
October 2002-December 2002	Complete final Monitoring Plan	Network Coordinator
January 2003→	Begin network Vital signs monitoring implementation	Network Coordinator, Technicians, park staff

Table 1. Monitoring in the Mediterranean Coast Network.

The following table shows ongoing and planned monitoring in the Mediterranean Coast Network. Shaded cells indicate overlap of vital signs indicators for two or three parks. These overlapping monitoring programs may use identical or similar protocols as appropriate. In park status columns, letters indicate monitoring program status:

X = Currently monitored. Identified as vital sign indicator in vital signs workshop, monitoring plan, and/or resource management plan.

P = Monitoring protocols have been prepared, but not currently monitored. Identified as vital sign indicator in vital signs workshop, monitoring plan, and/or resource management plan.

F = Future monitoring. Identified as vital sign indicator in vital signs workshop, monitoring plan, and/or resource management plan. Monitoring protocols to be developed.

<i>Vital Signs Indicators</i>	<i>Park Status</i>		
<i>Marine</i>	<i>CABR</i>	<i>CHIS</i>	<i>SAMO</i>
Tidepools	X	X	
Kelp Forest		X	
Seabirds		X	
Pinnipeds		X ¹	
Fisheries Harvest		P	
Fish	F		
<i>Plants</i>			
Vegetation Communities	X	X	F
Vegetation Populations (exotics)	F	P	F
Vegetation Populations (sensitive/rare species)	F	P	F
<i>Animals</i>			
Small Mammals	F	P	F
Carnivores	F	P	X
Herpetofauna	X ²	P	X ²
Bats	F	P	F
Breeding Birds	F	X	F
Migratory Birds	F		
Raptors			F
Invertebrates	F	P	F
Salmonids			F
Streams (aquatic vertebrates and invertebrates)			X ³
<i>Physical and Social</i>			
Air Quality	X ¹	X	X ¹
Habitat Fragmentation			X ⁴
Visibility	X		
Geologic Hazards	F		F
Water Quality	F	P	X
Weather	X ¹	X	X ¹
Visitors	X	X	X
Sand Beaches		X	
Streams (basic water quality, stream conditions)			X ³

¹Monitored by non-NPS agency

²Currently inventory, changing to monitoring in FY01

³The stream monitoring at SAMO is an integrated program examining aquatic vertebrates and invertebrates, basic water quality, and physical stream conditions (e.g. flow, pool depth).

⁴Carnivores currently monitored as indicators of habitat fragmentation.

Table 2. Budget for FY2001 Vital Signs Startup Funding.

	Amount	Item
Shared	\$13,000	Monitoring Coordinator, GS-11 (5.5 pp, July 15 - Sept 30)
	\$3,000	Computer for Coordinator
	\$1,200	Travel for coordinator
	\$500	Misc. Supplies & Equipment
	\$7,000	June 2002 Workshop expenses (to be obligated in FY01 through existing cooperative agreement)
	\$24,700	Shared Total
CABR	\$15,000	Technician for CABR (summer)
	\$600	CD burner & supplies
	\$300	Basic desk supplies
	\$2,500	Shelving and storage devices
	\$3,000	Desk top computer
	\$500	Hand held computer, software, modem
	\$700	Digital camera
	\$3,000	MS Access expert services
	\$25,600	CABR Total
SAMO	\$45,000	Technicians for herpetofauna monitoring
	\$6,000	Stream assessment technician
	\$3,200	Monitoring training for technicians
	\$3,700	Salary for GIS Support
	\$8,000	Office furniture
	\$7,000	GIS Server/Workstation
	\$6,000	Computers for SAMO monitoring technicians (2)
	\$1,200	Phones for all cubicles (4)
	\$6,000	Physical storage for NRBib, data, NR files
	\$700	Digital camera
	\$1,200	Real-time beacon for park I&M GPS unit
	\$4,500	Telemetry collars for ongoing carnivore monitoring
	\$1,200	Herpetofauna monitoring pitfall trap supplies
	\$6,000	Flow meter for stream monitoring
	\$99,700	SAMO Total
	\$150,000	Network Total

Table 3. Budget for FY2002 Vital Signs Funding.

	Amount	Item
Shared	\$63,000	Monitoring Coordinator, GS-11*
	\$63,000	Shared Total
CABR	\$34,000	I&M Technician, GS-05*
	\$34,000	CABR Total
SAMO	\$34,000	I&M Technician, GS-05*
	\$30,000	Salary for I&M GIS and Database Support*
	\$64,000	SAMO Total
	\$161,000	Network Total**

* Amount identified allows for 3% cost of living increase and ~3% step increase.

** Only \$150,000 is anticipated for FY02. Before receiving FY02 funding, network will determine how parks will cover amount needed beyond this funding level.

Table 4. Ongoing I&M projects supported with monitoring startup funding.

Project	Description
Herpetofauna Inventory & Monitoring (CABR, SAMO)	Herpetofauna are recognized by the local and international scientific communities as important indicators of environmental health. Working with Dr. Robert Fisher, USGS-BRD, SAMO and CABR have initiated a reptile and amphibian inventory and monitoring program. Additionally, herpetofauna monitoring is underway in other parts of the south coast Mediterranean region under the direction of Dr. Fisher. Each of these inventory and monitoring efforts use similar methods, data management and reporting. Methods have been tested and peer-reviewed and work has resulted in several published manuscripts. Currently the parks are funding this work through a combination of Biological Inventory, NPS and other project funding sources, and base funds with the expectation that vital signs monitoring funding will enable the program to continue into the future. FY01 and FY02 funds will supplement existing funding and enable the parks to transition from an inventory focus to monitoring. Collected data is entered into an Access database, documented with the Dataset Catalog.
Stream Monitoring (SAMO)	This project is an expansion of ongoing work by Dr. Lee Kats of Pepperdine University. Dr. Kats has monitored streams in the Santa Monica Mountains annually for several years using a crew of undergraduate students. Methods are tested and easily transferable. Study results have been published in major peer-reviewed journals. SAMO monitoring funds will enable the park to join with Dr. Kats to expand monitoring to all major streams in the Santa Monica Mountains. Once a baseline data set is acquired and analyzed, a subset of streams will be selected for long-term monitoring. In addition, Dr. Robert Fisher, USGS-BRD, has adopted the same sampling methods and data management procedures and has recently expanded this work to streams throughout southern California. The study measures urban effects on the ecosystem through a variety of indicators including basic water quality and effects of introduced species on native communities. Collected data is entered into an Access database, documented with the Dataset Catalog.
Carnivore Monitoring (SAMO)	Carnivore monitoring in the Santa Monica Mountains has been ongoing since 1995 through a partnership of researchers and resource managers at NPS, University of California Los Angeles, University of Massachusetts, California State University Northridge, and California Department of Parks and Recreation. Funding was initially acquired through non-NPS sources. Over time, NPS project and base funding in addition to non-NPS funds has enabled the park to continue the work. At this point, the project is transitioning to a long-term monitoring phase. A small amount of monitoring money will promote this transition and ensure data continue to be collected. This project is actually using carnivore movements, mortality, and habitat usage to measure effects of habitat loss and fragmentation. Numerous published manuscripts have resulted from various components of this project. Methods were carefully developed and documented and collected data is entered into an Access database, documented with the Dataset Catalog.
Natural Resource Bibliography (CABR)	CABR requires assistance to support the park's other monitoring efforts through data management and organizing the park Natural Resource Bibliography and other reference information.